

- 28 -

**C l a i m s**

1. Production unit (1), in particular a bending press (2), for forming workpieces (3) of sheet metal, having two press beams (15, 16) which are displaceable relative to one another by means of a drive mechanism (53) and can be used to obtain a required tool length (42) by fitting a variable number of bending tools (36, 37), and having a control device (46) connected to the drive mechanism (53) for influencing the operating behaviour of the production unit (1) as a function of states detected by sensors, manual control commands and/or specifications stored in a memory device, in which the inserted bending tools (36, 37) have at least machine-readable unmistakable codes in the form of electronically detectable information carriers (43) for identifying them and/or detecting their position on an at least partially automated basis, and an electronic detection device (44) connected to the control device (46) or to a control and/or evaluation device (47) co-operating with it for detecting a plurality of information carriers (43) co-operates with the first and/or second press beam (15; 16), and at least one displacement and/or guide mechanism (45) is provided which extends essentially parallel with the achievable tool length (42) and accommodates the detection device (44) so that the codes or data and/or detection signals of a plurality of information carriers (43) can be detected in sequence during a relative displacement of the detection device (44) along the displacement and/or guide mechanism (45) and can be transmitted to the control device (46) or the control and/or evaluation device (47) co-operating with it, characterised in that the displacement and/or guide mechanism (45) for the detection device (44) is recessed in a press beam (15) or in the press table or is at least partially integrated therein.

2. Production unit as claimed in claim 1, characterised in that the displacement and/or guide mechanism (45) is disposed in a groove-shaped recess (59) in a tool holder mechanism (35) and the recess (59) extends into the press beam (15) and into a table top (60) of the press table.

3. Production unit as claimed in claim 2, characterised in that, by reference to its longitudinal direction, the recess (59) extends approximately across the maximum possible tool length (42).

4. Production unit as claimed in one of the preceding claims, characterised in that a

hollow compartment (61) closed towards the outside is provided in the press beam (15) and in the press table.

5. Production unit as claimed in one of the preceding claims, characterised in that a plate-type cover element (64) is provided between the hollow compartment (61) and the groove-shaped recess (59) in the tool holder mechanism (35).

6. Production unit as claimed in one of the preceding claims, characterised in that the detection device (44) is coupled with the control and/or evaluation device (47) via a line connection (48) so as to transmit signals.

7. Production unit as claimed in claim 6, characterised in that the line connection (48) is provided in the form of a trailing cable system (49) disposed within the displacement and/or guide range of the detection device (44).

8. Production unit as claimed in one of the preceding claims, characterised in that a maximum detection distance (82) between the displaceably mounted detection device (44) and an information carrier (43) of an adjacent bending tool (36; 37) is shorter than a smallest possible distance (83) between two information carriers (43) of bending tools (36; 37) lined up in a row adjacent to one another without any gaps.

9. Production unit as claimed in one of the preceding claims, characterised in that the displacement and/or guide mechanism (45) is a flexible transport element (55) to which the detection device (44) is attached.

10. Production unit as claimed in claim 9, characterised in that the flexible transport element (55) is guided round two mutually spaced pulley blocks (56, 57) or winding spools.

11. Production unit as claimed in one of the preceding claims, characterised in that the displacement and/or guide mechanism (45) has a guide element (50) with a guide carriage (51) relatively displaceable thereto, on which the detection device (44) is disposed.

12. Production unit as claimed in one of the preceding claims, characterised in that the

displacement and/or guide mechanism (45) has a displacement drive (58) connected to the control device (46).

13. Production unit as claimed in claim 12, characterised in that the displacement drive (58) can be reversed in its direction of rotation or motion.

14. Production unit as claimed in one of the preceding claims, characterised in that the information carriers (43) are transponders (77) which can be detected contactlessly or without being touched.

15. Production unit as claimed in claim 14, characterised in that the transponders (77) operate without batteries.

16. Production unit as claimed in claim 14 or 15, characterised in that the transponders (77) can be inductively or electromagnetically coupled with the detection device (44) via corresponding transmitter and/or receiver devices (52) for electromagnetic waves.

17. Production unit as claimed in one of the preceding claims, characterised in that the detection device (44) is able to intervene by reading and writing to a non-volatile memory device (81) of the information carriers (43) or transponders (77).

18. Production unit as claimed in one of the preceding claims, characterised in that the information carriers (43) have a passive position detection element (69).

19. Production unit as claimed in claim 18, characterised in that the position detection element (69) is provided in the form of a metal screen (71) or another metal element on the information carrier (43).

20. Production unit as claimed in one of the preceding claims, characterised in that the detection device (44) has an inductive sensor (72), in particular a Hall-effect sensor, for detecting a metal screen (71) or another metal element on or in the region of an information carrier (43).

21. Production unit as claimed in one of the preceding claims, characterised in that the detection device (44) or control and/or evaluation device (47) has a distance measuring device (73) which measures the displacement path travelled by the detection device (44).
22. Production unit as claimed in one of the preceding claims, characterised in that the displacement and/or guide mechanism (45) is a displacement drive (58) and has a stepper motor (74) connected to the control and/or evaluation device (47) for determining the displacement path and/or controlling the displacement path.
23. Production unit as claimed in one of the preceding claims, characterised in that the flexible transport element (55) has at least one electric conductor track (68) which has an electrical connection to the detection device (44).
24. Production unit as claimed in claim 23, characterised in that the conductor track (68) on the transport element (55) is connected to a stationary slide contact (67) so as to pick up and/or transmit electric signals from and to the detection device (44) in a sliding connection.
25. Production unit as claimed in claim 24, characterised in that the slide contact (67) is connected to the control and/or evaluation device (47).
26. Production unit as claimed in claim 23 or 24, characterised in that contact can be made with the conductor track (68), which is electrically isolated from the pulley blocks (56, 57), from the top face of the transport element (55).
27. Production unit as claimed in claim 1, characterised in that the displacement and/or guide mechanism (45) has a spindle drive (84) on which the detection device (44) is mounted and is displaceable in two directions along the possible tool length (42) by a reversible rotating motion of a threaded spindle (85) of the spindle drive (84).